

## New and little known African Encyrtidae, with descriptions of two new genera (Hymenoptera: Chalcidoidea)

by

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Re-examination of the types of some Risbec species has led to new combinations and synonymies, as follows: *Litomastix creona* and *Aphycomorpha senegalensis* are transferred to *Ooencyrtus*, and *Pseudolitomastix* Risbec, 1954 (not Eady, 1960) is synonymized with the latter genus. *Apterencyrtus africanus* Risbec and *Exoristobia deemingi* Subba Rao are synonymized with *Aphycopsis dipterae* Risbec, and the latter placed in *Exoristobia*. *Apterencyrtus ceroplastae* Risbec and *Protyndarichus combretae* (Risbec) are redescribed and two new species of the latter genus from South Africa are described, namely, *sparnus* and *orarius*. Two new genera are described for two new South African species reared from scale insects: these are *Allencyrtus monomorphus* and *Hadrencyrtus cirritus*. *Neococcidencyrtus poutiersi* (Mercet) is reported from Natal, the first record of the genus from Africa.

This paper presents descriptions and records of new and poorly known genera and species of Encyrtidae from Africa. Included are the results of re-examination of the types of some species described by Jean Risbec, on loan from European collections. It has been necessary to remount part or all of the types, and lectotypes have been designated. This revision of the Risbec material is necessary since his generic assignments were not always correct and his descriptions and figures not always adequate with regard to detail and accuracy.

### **OOENCYRTUS** Ashmead

**Ooencyrtus** Ashmead, 1900: 338, 345, 381

**Pseudolitomastix** Risbec, 1954: 1068, **syn. nov.**

Several species described by Risbec were apparently misplaced to genus (*vide* Annecke & Insley, 1971). Two such species are dealt with below following further study of the types and both are transferred as new combinations to *Ooencyrtus* Ashmead.

*Litomastix creona* Risbec was described in 1951 and was later (Risbec, 1954) made the type species of *Pseudolitomastix* Risbec (not Eady, 1960). Thereafter Risbec (1958) transferred the species to *Paralitomastix* Mercet, thereby effectively synonymizing *Pseudolitomastix* with Mercet's older genus. However, a comparison of the two species *creona* and *P. varicornis* (Nees), type species of *Paralitomastix*, has shown that they are not congeneric; and that *creona*, despite its peculiar mandible, may, at least for the time being be better accommodated in *Ooencyrtus*. Hence the new generic synonymy is introduced as shown above. If it should prove necessary, when the species of the worldwide genus *Ooencyrtus* are reviewed, species like *creona* can be accommodated in *Pseudolitomastix* for it is still an available generic name.

*Ooencyrtus creona* (Risbec), **comb. nov.**, figs 1-5

**Litomastix creona** Risbec, 1951: 133-5.

**Pseudolitomastix creona** (Risbec): Risbec, 1954: 1068.

**Paralitomastix creona** (Risbec): Risbec, 1958: 31; Annecke & Insley, 1971: 21.

Lepidopterous eggs recorded as those of "*Anaphaeis creona*" by Risbec (1951) are preserved with the material of this species that we have studied. Some still contain dead adult parasites that failed to emerge, or their remains, thus evidently confirming that *O. creona* is a solitary egg parasite. The following descriptive notes were drawn up from type material in order to supplement the original description of the species.

**FEMALE.** Head (fig. 4) slightly wider than dorso-ventral height (measured to margin of mouth medially); ocelli in an acute-angled triangle; fronto-vertex at median ocellus about as wide as mouth, about one-third head width; toruli about one diameter from mouth and about twice this interval from each other and from eyes; scrobes lightly impressed, with very gradually rounded edges, dorsally confluent slightly below level of middle of eyes; mandible (fig. 2) with an acute ventral tooth, separated from a second similar one by a notch, and with a somewhat retracted, slightly oblique upper truncation, connected with the second tooth, that has the cutting edge serrate, each serration with rounded apex; maxillary palpi with four segments, labial each with three (cf. Risbec, 1954: 1068); antenna (fig. 3) eleven-segmented, scape sub-cylindrical, funicle with first segment plainly smaller than the remainder, without rhinaria, II-VI larger, sub-quadrate, with rhinaria; club a little thicker than funicle, about as long as the three preceding segments together, with two transverse, entire, but rather indistinct septa; thorax in dorsal view with pronotum very short, arcuate; mesoscutum without parapsidal sulci, with a short, broad posterior marginal salient overlying mesal ends of axillae; scutellum broad, rounded posteriorly, the apex only slightly produced medio-distad, not or hardly reaching hind margin of metanotum; propodeum very short medially, longer laterally, with latero-caudal angles rounded; sculpture of thorax, like head, cellulose-reticulate, slightly more raised on scutellum, and the cells slightly smaller, than on mesoscutum; legs long and slender relative to body, the middle tibial spur slightly shorter than adjacent tarsal segment; forewing (fig. 1) with sub-marginal vein slender, marginal longer than wide, a little shorter than post-marginal which is slightly shorter than stigmal; basal triangle with a basal bare part as in fig. 1; speculum open caudally, reaching to near stigmal vein; marginal fringe cilia present, the longest a little shorter and finer than setae of sub-marginal vein; gaster shorter than thorax; ovipositor strongly developed, its base as seen through the derm in cleared material lying beneath apical part of scutellum; ovipositor slightly longer than middle tibia (about 10:9), about four times as long as each gonostylus; the latter slightly longer than middle tibial spur (about 13:12), the distal one-third or so of each extruded at apex of gaster.

**MALE.** Fronto-vertex wider than in female, the ocelli in about an equilateral triangle; antenna as in fig. 5; toruli placed rather high on face, their upper limits at about lower level of eyes; otherwise, aside from genitalia, similar to female.

**MATERIAL EXAMINED.** 6 ♀ 3 ♂ "Bambey" ex eggs "*Anaphaeis creona*, *Litomastix creona* Risbec" in an air-cavity mount on a slide labelled by Risbec; this is type material, now remounted as follows:— ♀-lectotype, 1 ♀ 1 ♂ on card-points, 4 ♀ 2 ♂ on slides

(Accession Book No. T 4227) after clearing in caustic soda; all but 1 ♀ 1 ♂ (in Plant Protection Research Institute, Pretoria (PPRI)) returned to Museum National d'Histoire Naturelle, Paris (MHNP). Additional material consists of three of Risbec's air-cavity slides, with a total of 36 ♀ 9 ♂, which have not been remounted. These are labelled by Risbec: "*Litomastix creona* Risbec; ex w. *Epilachne chrysomelidae*" which on one slide is corrected to "ex w. *Anaphaeis creona*".

*Ooencyrtus senegalensis* (Risbec), **comb. nov.**, figs 6-11

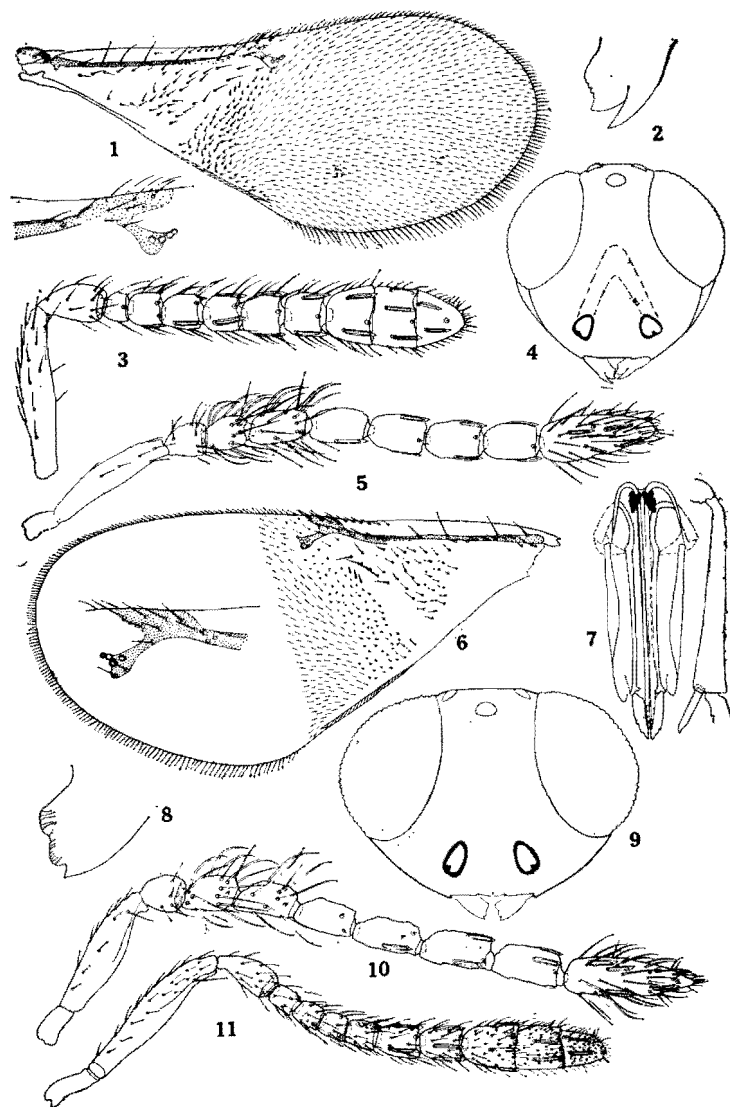
**Aphycomorpha senegalensis** Risbec, 1951: 143-5; Annecke & Insley, 1971: 6, 37.

The incorrect placing of this species in *Aphycomorpha* Timberlake, a genus known from the coccoid-inhabiting Hawaiian type species and from a second species from New Zealand, is apparent. It has little in common with genera allied to *Metaphycus* Mercet, and in habitus and structure resembles described and other species at hand of *Ooencyrtus* and *Psyllaephagus* Ashmead; in Trjapitzin's (1971) key to the palaearctic genera, *senegalensis* may be placed in *Psyllaephagus* rather than *Ooencyrtus* on account of the mandible, but in this respect it differs from several African psyllid-reared species which we place in *Psyllaephagus*. In view of its host-relations (parasitic in lepidopterous eggs) and of the already somewhat heterogeneous nature of the genus *Ooencyrtus*, the species is taken up in the latter genus. *O. senegalensis* may be recognized from the original description and the following supplementary description.

**FEMALE.** Head (fig. 9) almost 1.5 times as wide as dorso-ventral height (measured to median margin of mouth), about three times as wide as fronto-vertex at median ocellus; viewed dorsally, anterior margin broadly emarginate between eyes, the inter-scoral prominence not or hardly visible in this view at the deepest part of the emargination; ocelli in an obtuse-angled triangle; mandible (fig. 8) with an acute ventral tooth, and a somewhat retuse dorsal truncation; antenna as in fig. 11, the last three, but not the first three, funicle segments, and club, with rhinaria, the whole flagellum with sparse, short, slender setae. Thorax with axillae meeting medially, the hind margin of mesoscutum transverse, not produced caudad to overlie mesal ends of axillae in a flap-like salient as in *O. kuwanai* (Howard) and *O. johnsoni* (Howard); scutellum large, strongly rounded from side to side, with close cellulate-reticulate sculpture that is more raised than on mesoscutum. Legs distinctively banded with brown near apex of middle femur and near base of middle tibia, and with hind femur brown in distal one-half except apex; legs otherwise white; middle tibial spur about two-thirds length of adjoining tarsal segment. Fore-wing (fig. 6) with marginal and post-marginal veins short, sub-equal, the stigmal fully or nearly twice as long; disc with setae very short, fine and almost translucent in basal one-half of wing except on margins of speculum cephalically. Gaster short, broadly attached to propodeum, considerably shorter than ovipositor as seen through the derm in cleared specimens; ovipositor (fig. 7) not extruded caudad, reaching forward beneath scutellum, longer than middle tibia (about 4:3) and about 5.5 times as long as each gonostylus; the latter about as long as middle tibial spur.

**MALE.** Similar to female but head only slightly more than twice as wide as fronto-vertex, ocelli in a strongly obtuse-angled triangle; antenna as in fig. 10.

**MATERIAL EXAMINED.** The type series 10 ♀ 11 ♂ (not 9 ♀ 14 ♂ as stated by Risbec, 1951:145) under a single coverslip on a slide labelled "ex W Archidae, Psaliodes, 27.7.40, mil, VI.12, *Aphycomorpha senegalensis* Risbec"; this material has been



Figs. 1-11. *Ooencyrtus* species. 1-5. *Ooencyrtus creona* (Risbec). 1. Right fore wing, venation enlarged (♀T 4227-1). 2. Apex of left mandible (♀T 4227-1). 3. Right antenna, outer aspect (♀T 4227-1). 4. Head, anterior aspect (♀T 4227-1). 5. Left antenna, inner aspect (♂T 4227-1). 6-11. *Ooencyrtus senegalensis* (Risbec). 6. Left fore wing, venation enlarged (♀T 4228-1). 7. Ovipositor and middle tibia, drawn to the same scale (♀T 4228-2). 8. Apex of left mandible (♀T 4228-1). 9. Head, anterior aspect (♀T 4228-1). 10. Right antenna, outer aspect (♂T 4228-3). 11. Right antenna, outer aspect (♀T 4228-1).

remounted: ♀-lectotype, 1 ♀ 1 ♂ on card-points, 3 ♀ 4 ♂ on slides (T 4228), 5 ♀ 6 ♂ replaced on original slide in a Canada Balsam mount; 1 ♂ on a slide labelled "ex W ——— VI.80, *Aphycomorpha senegalensis* Risbec"; all material (save 1 ♀ 1 ♂ on slides) returned to MHNP.

*Exoristobia dipterae* (Risbec), **comb. nov.**, figs 18–20

**Aphycopsis dipterae** Risbec, 1951: 158–60; Annecke & Insley, 1971: 6, 37.

**Apterencyrtus africanus** Risbec, 1955: 206–8; Annecke & Insley, 1971: 6, 37; **syn. nov.**

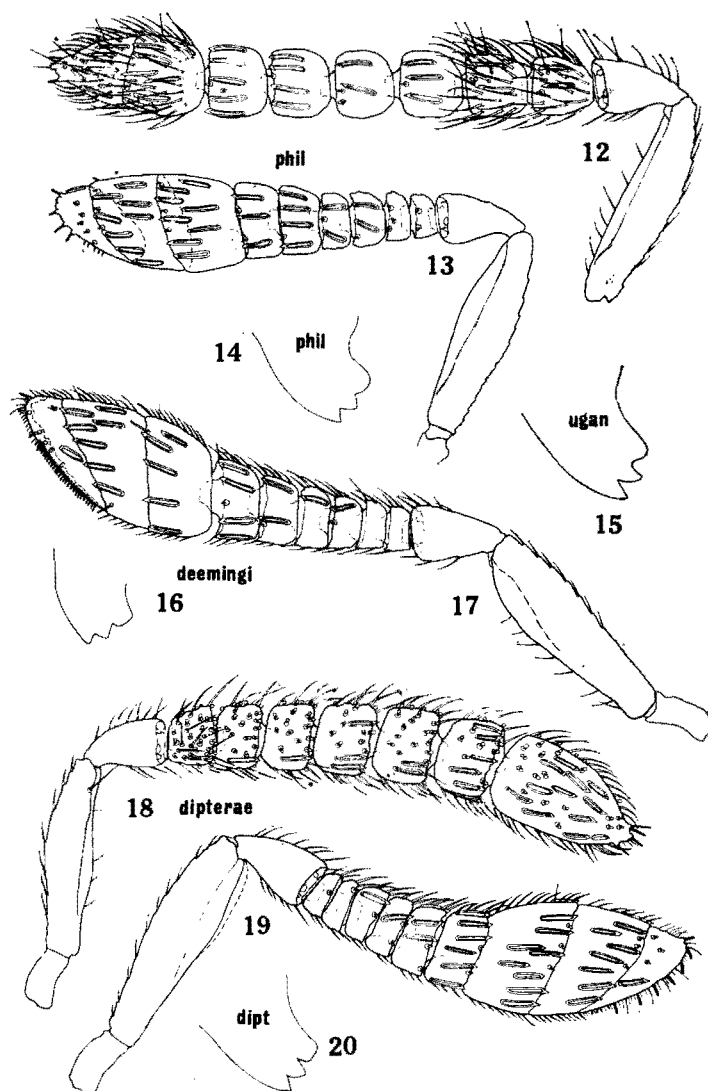
**Exoristobia deemingi** Subba Rao, 1970: 112–3; **syn. nov.**

The type series of *Aphycopsis dipterae* Risbec (8 ♀ 7 ♂) and of *Apterencyrtus africanus* Risbec (5 ♀ 1 ♂, and 1 ♀ head only) have been remounted and studied in detail in comparison with paratypes and other material of *Exoristobia deemingi* Subba Rao. The two other known species of the genus, *E. philippinensis* Ashmead, type species, and *E. ugandensis* Subba Rao were also at hand. The *diptrae* and *africanus* types agree generically in every respect with the two latter species, and are not distinguishable from *deemingi*. The description of the latter requires adjustment in three respects. First, the female antennal scape is expanded as may be seen in slide-mounts carefully made so that the scapes' lateral aspects are fully visible (fig. 17); in this character, the species differs from *philippinensis* only in that the ventral expansion continues to near the apex while in *philippinensis* (fig. 13) the scape is apparently widest at the middle, narrowing distad. Second, the distal part, not the proximal part, of middle tibia fades to testaceous (cf. Subba Rao 1970: 112). Finally, the mandibles in *philippinensis*, *deemingi*, *africanus* and *diptrae* are almost identical: the uppermost tooth in all four species is truncate (figs. 14, 16, 20), the corners more or less rounded. The *ugandensis* mandible (fig. 15) is slightly different, having the rounded truncation apparently slightly narrower at apex, more widely separated from the middle tooth.

*E. dipterae*, as here understood, is difficult to distinguish from *philippinensis*. In the female, we can see only a difference in the scape (fig. 19), as noted above, and in colour of especially the hind tibia which in the latter species is more or less entirely testaceous, while in *diptrae* it is dark brown except in apical one-fourth or so which is testaceous; in the male, cleared slide-mounts show that in *diptrae* (fig. 18) the funicle and club have numerous sense-cones in addition to setae and rhinaria, whereas in *philippinensis* (fig. 12) the sense-cones are absent; the funicle segments of the latter tend to be slightly less transverse than in *diptrae*, and in the slide-mounted male at hand the club has a distinct septum on the outer side (fig. 12) but not on the inner side.

The type series of *E. dipterae* was stated to have been reared from "*Atherigona quadripunctata* Rossi" (Diptera: Anthomyiidae) at Bambey, Senegal, while the types of *E. deemingi*, from Samaru, Northern Nigeria, also are parasites of Diptera; in fact, 2 ♀-paratypes are recorded as parasitic in "*Atherigona* sp.". The types of *africanus* were likewise stated to have issued from a dipterous pupa (Risbec, 1955: 208).

**MATERIAL EXAMINED.** *E. dipterae*—the type series, 8 ♀ 7 ♂, in an air-cavity mount, data in accordance with Risbec (1951: 160); material now remounted, ♀-lectotype, 1 ♀ 2 ♂ on card-points, 2 ♀ 2 ♂ on slides after clearing (T 4226), 4 ♀ 3 ♂ in a capsule; this material save 2 ♀ 2 ♂ in PPRI, returned to MHNP. *A. africanus*—the type series, 5 ♀ 1 ♂, on two slides (1 ♀ fragmented beneath two coverslips), data matching those given by Risbec (1955: 208); 4 ♀ 1 ♂ remounted as follows: 1 ♀-lectotype on a card-point, 1 ♀ on a card-point, with extra head in a capsule, 2 ♀ 1 ♂ slide-mounted



Figs. 12-20. *Exoristobia* species. 12-14. *Exoristobia philippinensis* Ashmead. 12. Left antenna, outer aspect (♂T 4235-2). 13. Left antenna, outer aspect (♀T 4235-1). 14. Left antenna, outer aspect (♀T 4235-1). 15. *Exoristobia ugandensis* Subba Rao. 15. Apex of right mandible (♀T 3318-1). 16-17. *Exoristobia deemingi* Subba Rao, female paratype. 16. Apex of right mandible. 17. Right antenna, inner aspect. 18-20. *Exoristobia dipterae* (Risbec). 18. Right antenna, outer aspect (♂T 4226-2). 19. Right antenna, outer aspect (♀T 4226-1), broken line shows ventral margin of scape in antenna mounted fully laterally. 20. Apex of right mandible (♂T 4226-2).

(T 4302); this material, save 1 ♀ in PPRI, returned to Office de la Recherche Scientifique et Technique Outre-Mer, Bondy, France (ORSTOM). *E. deemingi*—2 ♀ 2 ♂ “NIGERIA Samaru 23.ix.1959 Min. Agric. P 136 ex pupa of tachinid on *Coniesta ignefusalis* CIE Coll No. 16951”; these data agree with that given by Subba Rao (1970) for 2 ♀-paratypes, but the specimens carry no paratype labels; 2 ♀ fragmented on slides apparently from Subba Rao’s second and third lot of paratypes; 6 ♀ 2 ♂ bearing data in agreement with that given by Subba Rao (1970: 113) for “Additional material”, received on two pins each with a paratype label; 1 ♀ 1 ♂ remounted after clearing, on two slides; all material, except 1 ♀ 1 ♂ slide-mounted in PPRI, returned to B.R. Subba Rao; *E. philippinensis*—2 ♀ 1 ♂ (T 4235) from the fourth lot and 1 ♀ from the fifth lot of material listed by Subba Rao (1970: 110), both lots from Ceylon; 2 ♂ (det. Ch. Ferriere) from the seventh lot (from Malaysia). *E. ugandensis*—10 ♀ (T 3318) with data as for the types except date, iii.1969.

*Apterencyrtus ceroplastae* Risbec, figs 21–22

***Apterencyrtus ceroplastae*** Risbec, 1954: 1061; Annecke & Insley, 1971: 6, 37.

Having seen the type specimens, Annecke & Insley (1971) noted that both this species and *A. africanus* Risbec, 1955 may be misplaced in *Apterencyrtus*. *A. africanus* has been dealt with above as a synonym of *Exoristobia dipterae* (Risbec). We have now studied the *ceroplastae* types in detail, after remounting, and have designated a female, now card-pointed, as the lectotype. *A. ceroplastae* runs to *Apterencyrtus* in the key of Trjapitzin (1971) although it differs from the type species, *A. microphagus* Mayr, 1875, in certain important respects, as follows:—

**FEMALE.** Antenna (fig. 21) quite different from that of the type species, with the funicle segments transverse, increasingly so from I to VI, only VI with rhinaria; club a little longer than pedicel and funicle together, the two septa oblique, and apex strongly obliquely truncate; venation of fore wing as in fig. 22, the marginal vein shorter than in the type species; scutellum without a cluster of bristles, with about 25 rather sparse, slender setae in cephalic two-thirds of the sclerite, as well as a sub-erect, sub-apical pair; scutellar sculpture cellulate-reticulate, the cells longer than broad, with sculptural ridges much coarser than on mesoscutum, the latter’s sculpture finer and less raised than in *microphagus*.

In characters of the head and gaster, *ceroplastae* and *microphagus* resemble each other closely; fronto-vertex long, rather narrow, sub-parallel-sided, its length a consequence of the shape of the head which is sub-semicircular in dorsal aspect (occiput held at the perpendicular), the occipital margin a little concave; scrobes broad and deep, with sloping sides, causing the face to appear as though inflexed; antennal toruli low on the face, about equidistant from each other and from eyes and less than one-third this distance from margin of mouth; mandible of both species with two teeth and a dorsal truncation, the latter separated by a shallow notch.

For the present, lacking a more suitable alternative, we retain *ceroplastae* in *Apterencyrtus* although it appears to be distinctly more different from the type species than are the other included species known to us.

**MATERIAL EXAMINED.** 3 ♀ 5 ♂ (not 6 ♂) (T 4262) with data matching that of Risbec’s (1954: 1062) types from Senegal; ♀-lectotype, 1 ♀ 1 ♂ on card-points; 2 ♂ in a capsule; 1 ♀ 2 ♂ on three slides after remounting; all material (save 1 ♀ 1 ♂ on slides in PPRI) returned to ORSTOM.

**ALLENCYRTUS** gen. nov.

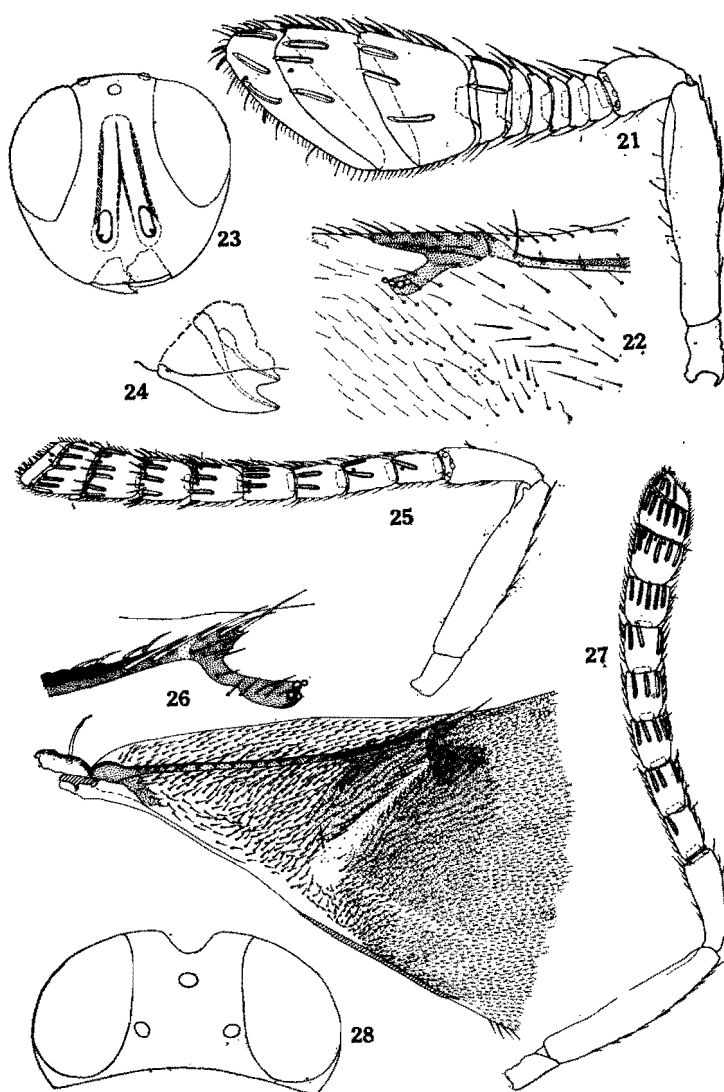
Type species: *Allencyrtus monomorphus* spec. nov.

**FEMALE.** Head (fig. 28) in dorsal view (occiput perpendicular) with occipital margin concave, anterior margin convex, bulging slightly at eyes and slightly flattened (save for scrobal emargination) anteriorly; fronto-vertex moderately broad, about one-third width of head, united with occiput abruptly but not acutely, sloping forward to imperceptible union with face; anterior margin deeply notched by upper scrobal confluence (as in *Tachardiaephagus* Ashmead and *Tachardiobius* Timberlake); temples narrowly connected with fronto-vertex behind eyes, the latter at narrowest less than an ocellar diameter from occipital margin; viewed from the front (fig. 23), head higher than wide, eyes slightly bulging, upper margin slightly flattened; toruli placed well above mouth, their upper limits about at lower ocular line; malar space a little shorter than length of eye; antennal scrobes long, deep, strongly sulcate, acutely margined on to face, confluent above; inter-scrobal area extending upward as an extremely acute-angled triangle, its surface only slightly convexly rounded, hardly prominent; in profile head sub-triangular, the upper surface slightly rounded, facial surface straight, with antennal scapes and radicles invisible when housed in scrobes; antenna with scape slender, sub-cylindrical, pedicel more than one-half as long as scape; funicle six-segmented; club three-segmented, little thicker than apex of funicle, with apical segment very short, emarginately truncate at apex; oral fossa small; maxillary palpi with four segments, labial with three; mandible (fig. 24) stout, short, broad at base, with a strong acute ventral tooth separated by a deep, rather wide notch from a slightly retuse upper truncation. Fronto-vertex sparsely and minutely punctate, with uniform cellulate-reticulate sculpture, the cells small but readily resolved at 100X magnification, giving the surface a shagreened effect; fronto-vertex with short, fine, scattered, decumbent setae. Thorax robust, longer than wide, convexly rounded antero-posteriorly and from side to side; seen dorsally, posterior part of pronotum which overlaps mesoscutum about one-third length of the latter on the meson; mesoscutum about twice as wide as median length, without a trace of parapsidal sulci, with a broad salient on hind margin obscuring mesal union of axillae; the latter hardly elevated; scutellum slightly wider than long, not pulvinate, sloping increasingly caudad, with a small shallow median depression behind mesal angles of axillae, reaching posteriorly to hind edge of metanotum; the latter arcuate but not strongly so; propodeum fully three times as long laterally as medially, with rounded postero-lateral angles. Mesonotal sculpture punctate-reticulate, the punctations small, and the sculpture standing out less than on fronto-vertex; mesonotal setae numerous, recumbent. Legs with middle tarsus somewhat thickened, the basal segment a trifle longer than the following three segments together.

Fore wing (fig. 26) with sub-marginal vein slender, marginal approximately punctiform, post-marginal hardly longer than wide; fore wing infuscated beneath distal one-fourth of sub-marginal to just beyond apex of stigmal, the infuscation fading in the disc and becoming faint towards caudal wing margin; distal part of wing entirely but faintly infuscated; speculum not interrupted, separated from caudal wing margin by a few setae; basal triangle of wing densely setose.

Gaster slightly shorter than thorax, narrowing sharply in caudal one-half to a broadly acuminate apex at which the gonostyli barely protrude; apical sternite posteriorly "V"-shaped beneath gonostyli.





Figs. 21–28. *Apterencyrtus ceroplastae* Risbec (♀T 4262–1). 21. Left antenna, outer aspect. 22. Venation of left fore wing. 23–28. *Allencyrtus monomorphus* spec. nov., paratypes. 23. Head, anterior aspect (♀T 3707–1). 24. Right mandible (♂T 3707–2). 25. Left antenna, male, outer aspect (T 3707–2). 26. Base of fore wing with venation enlarged (♀T 3707–1). 27. Left antenna, female, outer aspect (T 3707–1). 28. Head of male, dorsal aspect (T 3707).

MALE. Distinguishable from female, as dried material, only at the apex of gaster where the apical sternite is posteriorly narrowly emarginate beneath genitalia; antenna (fig. 25) closely resembling that of female.

The foregoing new genus resembles *Tachardiaephagus* Ashmead in many respects, but is distinguished by having the marginal vein of fore wing punctiform, the post-marginal about as long as wide; fore wing partly infuscated in both sexes; male and female antenna closely similar, eleven-segmented, both with apical club segment very short, obliquely or emarginately truncate at apex, the flagellum with short setae; mandible with lower tooth separated from upper truncation by a deep, wide notch.

***Allencyrtus monomorphus* spec. nov., figs 23–28**

♀ ♂—Colour, black with metallic refringence on head, mesonotum and base of gaster; head predominantly a shade of blue-green, violaceous on face above mouth, the inner parts of scrobes gleaming violaceous, polished in lower parts; mesonotum largely blue-green; base of gaster dorsally blue-green with violaceous reflections in plays of light; legs black, shiny in parts but not or hardly refringent, with apex of middle femur brownish white, middle tibia fading to dark brown, and middle tibial spur and tarsus basally and ventrally brown; fore wing as described above; hind wing hyaline. Body length about 1.6 mm.

Structurally as described for the genus above; in the female, the ocelli (fig. 28) are in a right-angled triangle or very nearly so, the lateral pair removed from orbits by almost one-half, from each other by about four times, and from occipital margin by about twice an ocellar diameter; antenna (fig. 27) with funicle segment I less than twice as long as wide, the following segments becoming progressively a little wider, and very slightly shorter, so that VI is only a trifle longer than wide; club slightly longer than funicle V and VI together; all funicle and club segments with rhinaria. Ovipositor longer than middle tibia (about 6:5) and about eight times as long as the short, triangular gonostyli; the latter hardly exerted at apex of gaster, about two-fifths as long as middle tibial spur which is slightly shorter than adjacent metatarsus. The male is very similar to the female, difficult to distinguish from it in dried specimens.

MATERIAL EXAMINED. ♀—Holotype, 8 ♀- and 7 ♂-paratypes with the following data:— SOUTH AFRICA: Eshowe, Ntl, xi.1970, H. P. Insley, with coccids on *Combretum kraussii* (T 3707, ♀-holotype, 5 ♀ 3 ♂); St. Lucia Reserve, Ntl., viii.1969, H. P. Insley, with coccids on *Loranthus* sp. (T 3160, 3 ♂); Oriibi Gorge, Ntl, i.1972, H. P. Insley, ex *Rhodesa clerdia* sp. on *Combretum kraussii* (T 4142, 3 ♀ 1 ♂).

***HADRENCYRTUS* gen. nov.**

Type species: *Hadrencyrtus cirritus* spec. nov.

The genus appears to share certain characters with *Microterys* Thomson, *Trichomasthus* Thomson and allies: it is readily distinguished, however, by the short, stout body; the shape of the short and broad head with rather shallowly impressed scrobes, and toruli low on the face; the rather long and very slender antenna; the infuscated fore wing; the tridentate mandible; and by other characters enumerated below.

FEMALE. Head thin antero-posteriorly, in dorsal view (occiput perpendicular) about 3.7 times as wide as median length, the anterior margin broadly rounded, slightly

flattened between the eyes, a trifle less rounded than the acute fronto-occipital margin; fronto-vertex at median ocellus very nearly one-third width of head, steeply declivous anteriorly, merging imperceptibly with face; in anterior view (fig. 31), head (measured to mouth margin) almost as high as greatest width across lower part of eyes, malar space about three-fourths greatest diameter of eye, the cheeks not strongly incurved; toruli situated about their own diameter from mouth margin, their upper limits well below lower level of eyes; scrobes present as plain but shallow impressions, forming an inverted V on face, confluent above, both inner and outer edge of each rounded not acute; inter-scrobal area a little raised, not strongly elevated; in profile, head rounded anteriorly, especially in front of lower part of eye, below this to mouth the face virtually flat; antenna (fig. 29) eleven-segmented, longer than head and thorax together, very slender, hardly clavate, the scape only slightly thickened at the middle, not ventrally expanded, funicle and club segments all longer than wide; mandible (fig. 33) plainly tridentate, the upper tooth blunt; maxillary palpi (fig. 33) each with four, labial each with three segments.

Thorax robust but short, wider across tegulae than median length (measured to middle of hind margin of propodeum), approximately as deep in profile as long, convex dorsally; mesoscutum without a trace of parapsidal sulci, about three times wider than long and fully twice median length of pronotum; mesal ends of axillae separated in dry material; scutellum slightly wider than long; propodeum short medially, longer laterally. Legs not unusually modified, the middle tibial spur shorter than adjacent tarsal segment.

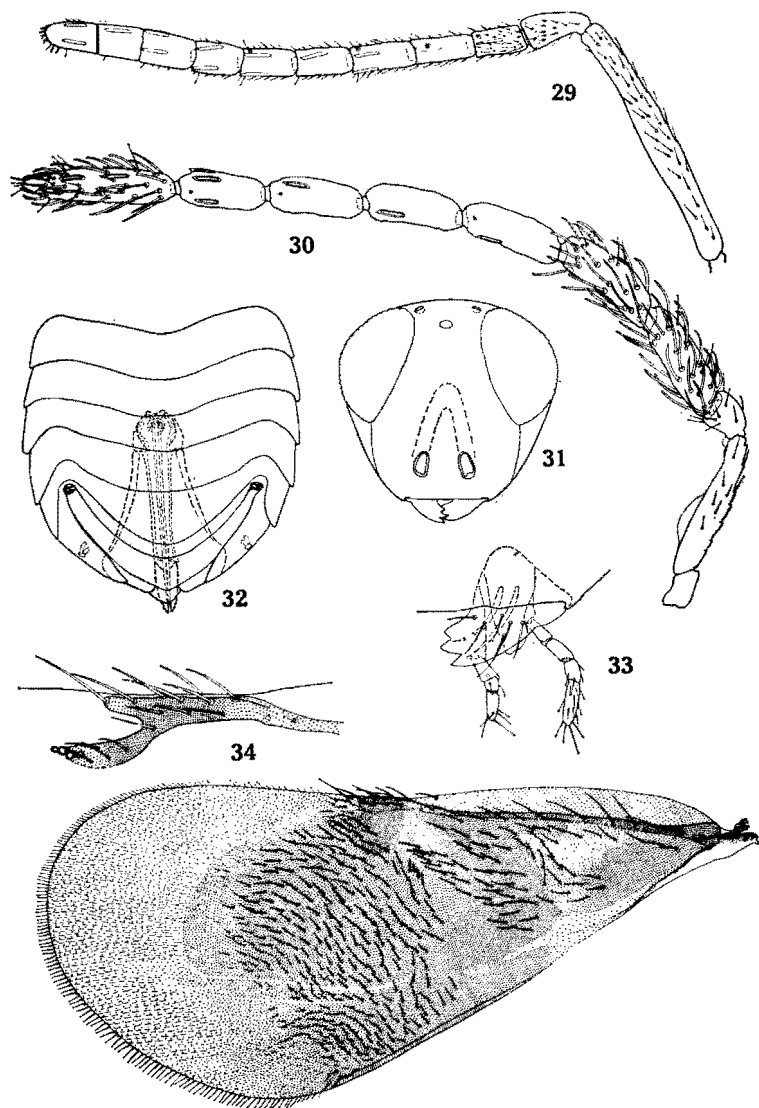
Fore wing (fig. 34) with sub-marginal vein slender, marginal slightly longer than post-marginal, but shorter than stigmal; disc of wing rather deeply infuscated from base to beyond level of stigmal vein, the apex palely infuscated; hind wing hyaline, except at extreme base where it is lightly infuscated.

Gaster (fig. 32) short and broad, about as long as, and a little broader than thorax, broadly rounded at apex, the tips of gonostyli protruding apically; tenth tergum short, crescentic in dorsal aspect; outer plates of ovipositor shortly upcurved caudad to overlap apex of gaster lateral to gonostyli; cercal plates advanced from apex about one-third length of gaster in cleared slide-mounted specimens.

MALE. Head in dorsal view not quite as wide relative to length as in female; anterior margin to near orbits practically straight, fronto-occipital margin concavely broadly rounded; fronto-vertex about one-half head width; in anterior view, head almost one-fifth wider than high; toruli with upper limits above lower ocular line, twice as far from mouth as from each other; scrobes short, shallow, separated above by the inter-scrobal area which continues from mouth to fronto-vertex as a slightly raised ridge; antenna (fig. 30) nine-segmented, the scape a little expanded ventrad; funicle segments long and slender, each two or more times as long as wide; thorax and gaster much as in female, save in sex characters; fore wing hyaline except in extreme basal angle, with marginal vein shorter and post-marginal longer than in female, longer than marginal, reaching as far or almost, towards wing apex as stigmal.

***Hadrencyrtus cirritus* spec. nov., figs 29–34**

Colour (both sexes) largely jet black, shiny but without metallic refringence; apex of each tibia fading narrowly to blackish brown; apical tarsal segment of each tarsus dusky, remaining tarsal segments brownish white; female antenna yellow-brown



Figs. 29-34. *Hadrencytus cirritus* spec. nov., paratypes. 29. Left antenna, outer aspect (♀T 3355-1). 30. Left antenna, outer aspect (♂T 3355-2). 31. Head, anterior aspect (♀T 3355-1). 32. Gaster, dorsal, showing terga III-X and ovipositor (♀T 3355-1). 33. Mouthparts, left side (♀T 3355-1). 34. Left fore wing, with venation enlarged (♀T 3355-1).

with base of pedicel dorsally suffused with dusky; male antenna brownish, with scape and pedicel largely black to blackish brown. Apart from structural characters noted in the above generic description, the following are evident:—

**FEMALE.** Ocelli in slightly more than a right-angled triangle, the lateral pair slightly more than one-half, and anterior one about three times, an ocellar diameter from orbits; antenna (fig. 29) with pedicel longer than funicle segment I, the latter the shortest funicle segment, a trifle more than 1,5 times as long as wide; III the longest funicle segment, twice as long as wide; I–IV sub-equal in width, V and VI becoming wider; club about as long as funicle segments IV–VI together, slender, sub-parallel-sided; all funicle and club segments with rhinaria and with short, slender setae; fore wing as in fig. 34; gaster (fig. 32) with ovipositor (as seen through the derm) occupying about two-thirds length of gaster, about 1,2 times as long as middle tibia, and about 3,9 times as long as gonostyli; the latter sub-equal to middle tibial spur. Sculpture of head moderately coarsely cellulate-reticulate, the cells readily resolvable at 50X magnification, each about one-third to one-fourth an ocellar diameter; fronto-vertex, face and cheeks sparsely and shallowly punctate, the punctures giving rise to slender setae; mesonotum with similar sculpture, the cells on scutellum a little larger than on mesoscutum and head; mesoscutum a little more densely setose than scutellum; propodeum with dense setae lateral to spiracles. Body length about 1,5 mm.

**MALE.** Antennal scape ventrally expanded (fig. 30), widest slightly basad to middle; funicle segments III–VI and club with rhinaria.

**MATERIAL EXAMINED.** ♀-Holotype, 24 ♀- and 19 ♂-paratypes (T 3355):—**SOUTH AFRICA:** Ladismith C.P., iii.1970, H. P. Insley, ex *Distichlicoccus* sp. on *Salsola arborea* C. A. Smith. Our colleague, Mr G. de Lotto, reports that the host mealybug is an undescribed species.

*Neococcidencyrtus poutiersi* (Mercet)

**Coccidencyrtus poutiersi** Mercet, 1922: 399.

**Neococcidencyrtus alula** Compere, 1928: 213–4.

**Neococcidencyrtus poutiersi** (Mercet): Compere & Annecke, 1961: 60.

South African material of this widely distributed species was collected more than ten years ago in Durban, Natal, but was not recognized until after the publication of Annecke & Insley's (1971) catalogue. The material agrees in every respect with the published descriptions of the species.

**MATERIAL EXAMINED.** **SOUTH AFRICA:** Durban, Natal, xi.1962, J. Munting, ex *Furchadiaspis zamiae* (Morgan) (3 ♀ T 1099).

### **PROTYNDARICHUS** Mercet

Annecke & Insley (1971) included *Protyndarichus* among the encyrtid genera recorded from Africa on the basis of *P. ivorensis* Risbec, a species of which the types have not as yet been traced. Three further species are dealt with here, two being apparently new. All these appear to differ from other described species in combinations of characters associated with leg colour, shape of antennal segments, width of fronto-vertex, and in other ways.

***Protyndarichus sparnus* spec. nov., figs 35–38**

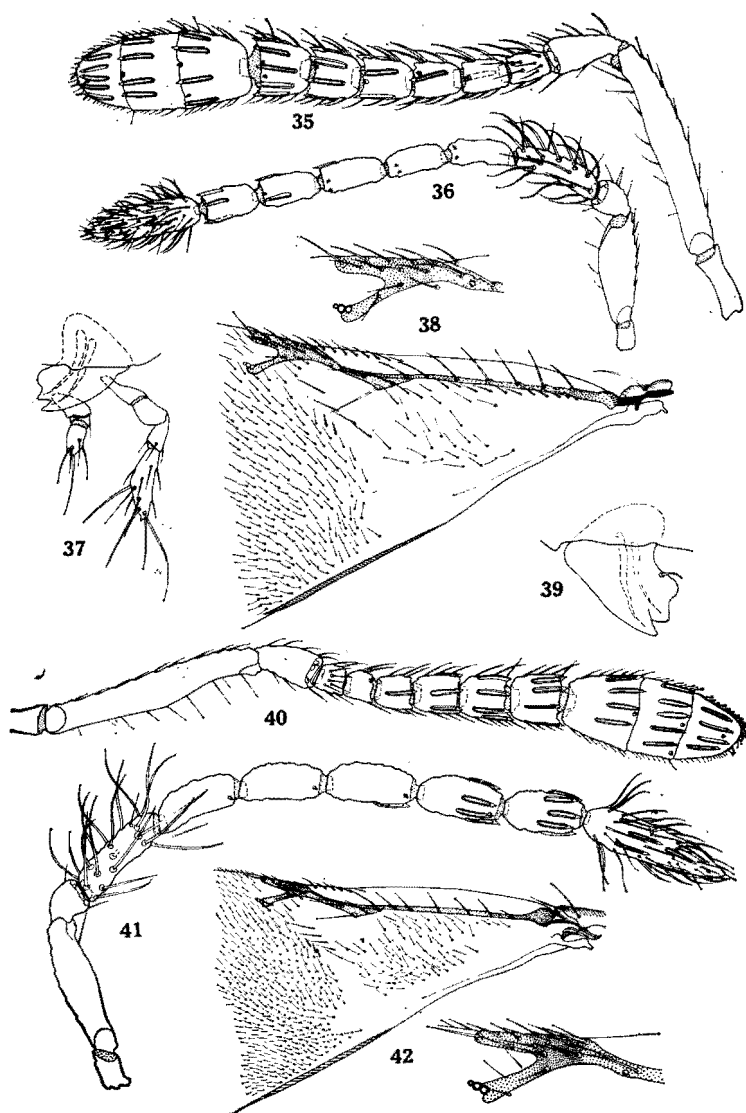
**FEMALE.** Colour, black with metallic refringence on the following parts: inter-scorbal prominence blue; base of gaster dorsally gleaming blue-green; fronto-vertex and mesoscutum blue; scutellum strongly blue-green, dull owing to sculptured integument; antenna with radicle, pedicel except apex, and base of club narrowly dark brown, otherwise pale brownish, the apical funicle segment yellowish brown; legs largely black, the trochanters and knees pallid, tibiae fading to brownish more or less widely towards apex; tarsi brownish; gaster black save at base dorsally. Body length about 1,4 mm including gonostyli.

Head approximately twice as wide as median length (occiput perpendicular); anterior margin evenly rounded, almost semicircular except that the eyes bulge slightly; occipital margin broadly and evenly concave; head about 4,5 times as wide as fronto-vertex at median ocellus, the latter separated from orbits by about its diameter; fronto-vertex becoming slightly broader anterior and posterior to a point slightly behind anterior ocellus; ocelli in an acute-angled triangle, the posterior pair separated by about 1,5 times their diameter, each close to orbits; in anterior view, head a trifle wider than median height (measured to mouth margin); scrobes short, not deep, gradually rounded on to face and inter-scorbal prominence, their dorsal confluence a little above lower level of eyes; toruli set low on face, removed from mouth by about one-half, from each other and from orbits by about twice, a torular diameter; mouth broad; mandibles tridentate (fig. 37), the upper tooth truncate at apex; antenna (fig. 35) with scape slender, hardly swollen at the middle; pedicel slender, slightly shorter than the two basal funicle segments; all funicle segments longer than wide, broadening from first to last, the latter almost as wide as long; club more or less as long as the preceding four segments together; funicle segments II–VI, and all club segments, with rhinaria; head uniformly cellulate-reticulate, the cells small, barely resolvable at 100X magnification; fronto-vertex and cheeks with scattered, slender setae.

Thorax without a trace of parapsidal sulci; mesoscutum with uniform cellulate sculpture much as on head, and with numerous scattered setae, its hind margin with a broad median salient overlying the mesal angler of axillae; the latter and scutellum with distinctly more raised sculpture, that on scutellum tending to longitudinally lineolate-reticulate laterally; scutellar setae as dense cephalically as on mesoscutum, more sparse caudally; metanotum obscured by scutellum medially; propodeum not distinctly sculptured, with about 12–15 long and slender setae lateral to each spiracle. Legs not especially modified, the middle tibial spur about as long as adjoining tarsal segment.

Fore wing (fig. 38) with sub-marginal vein distinctly triangularly expanded; basal triangle with setae predominantly slender and arranged as in fig. 38 to leave bare areas; longest marginal cilia about one-half as long as the longest setae on sub-marginal vein; hind wing setose from near base to apex.

Gaster including gonostyli about or almost as long as head and thorax together, apically acuminate; cercal plates placed about one-third length of gaster from base; ovipositor, as seen through the derm in cleared material, longer than gaster, arising beneath propodeum and extruded apically with gonostyli; ovipositor about twice as long as middle tibia, and about 3,3 times as long as gonostyli; the latter protruding beyond pointed apex of tergum X for about one-third of their length; each about 1,6–1,7 times as long as middle tibial spur.



Figs. 35-42. *Protynдарichus* species. 35-38. *Protynдарichus sparnus* spec. nov., paratypes. 35. Left antenna, outer aspect (♀T 981-1). 36. Left antenna, outer aspect (♂T 981-2). 37. Mouthparts, left side (♀T 981-1). 38. Base of left fore wing with venation enlarged (♀T 981-3). 39-42. *Protynдарichus combretae* (Risbec). 39. Right mandible (♀T 4379-2). 40. Right antenna, outer aspect (♀T 4379-1). 41. Right antenna, outer aspect (♂T 4379-3). 42. Base of left fore wing with venation enlarged (♀T 4379-1).

MALE. Differs from female in having the head, especially face and cheeks gleamingly blue-green; head about 2,8 times as wide as fronto-vertex at median ocellus, the latter about one-fourth width of fronto-vertex; lateral ocelli separated from each other by a little more than from anterior ocellus; toruli higher on face, placed at about lower level of eyes; antenna as in fig. 36, the scape distinctly expanded ventrally; gaster not as long as thorax in distended slide-mounts, the cercal plates approximately in the middle of its length.

MATERIAL EXAMINED. ♀-Holotype, 9 ♀- and 7 ♂-paratypes (T 981), SOUTH AFRICA: Pretoria, Tvl, xii.1961, C. H. Buitendag, with *Lecaniodiaspis tarsalis* Newstead on *Dombeya rotundifolia* Planch.; holotype and paratypes in PPRI, paratypes in British Museum (Natural History) BMNH and MHNP.

*Protyndarichus combretae* (Risbec), figs 39-42

**Paralitomastix combretae** Risbec, 1951: 124-5; 1958: 31; Annecke & Insley, 1971: 21.  
**Protyndachirus** (sic) **combretae** (Risbec): Risbec, 1954: 1067.

The types (18 ♀ 5 ♂) of this species have been remounted and a ♀-lectotype designated. The species was incorrectly assigned to *Paralitomastix* Mercet by Risbec in 1951 and replaced there in 1958 although in 1954 that author had correctly recognized it as a species of *Protyndarichus*. Detailed examination of the types has satisfied us that it is certainly congeneric with the two South African species of *Protyndarichus* described in this paper.

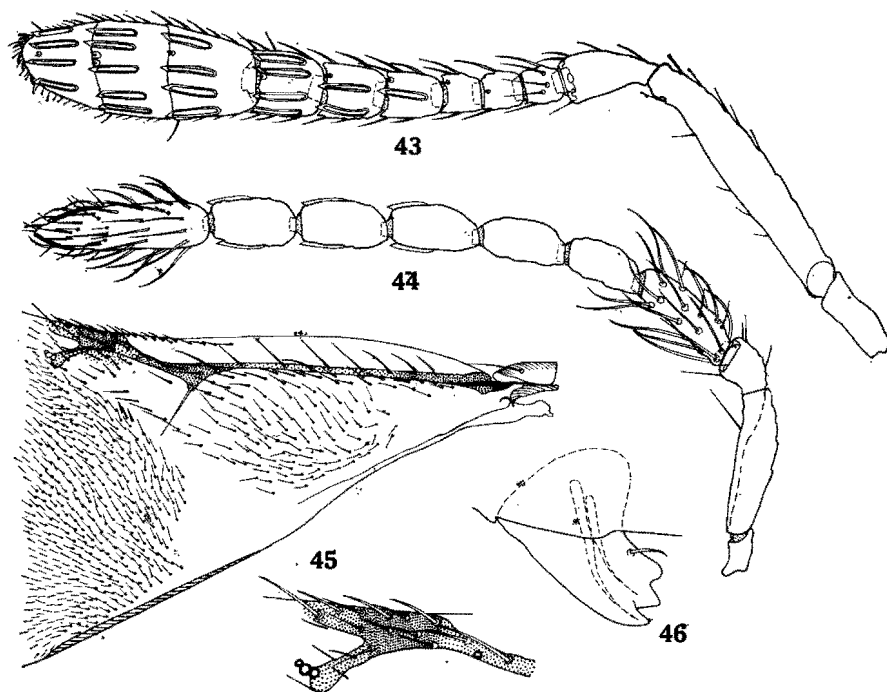
The following supplementary description will permit recognition of *P. combretae*.

FEMALE. Head about seven times as wide as fronto-vertex at median ocellus, the latter separated from orbits by about one-half its width; mandible (fig. 39) with upper two teeth sinuately separated; antenna (fig. 40) with the first two funicle segments small, sub-equal, sub-quadrate, without rhinaria, together slightly shorter than pedicel; remaining funicle segments of increasing size, all with rhinaria; scutellar sculpture somewhat as in *P. sparnus*, coarse, the cellulate reticulations tending to lineolate on the lateral parts; propodeum with at least 25 slender setae in a tight group lateral to each spiracle; fore wing (fig. 42) with discal setae very fine in basal one-half of wing; setae in basal triangle numerous; gaster much as in *P. sparnus*, the ovipositor about 1,8 times as long as middle tibia and about 3,3 times as long as gonostyli; the latter about 1,5 times as long as middle tibial spur.

MALE. Like the female except as follows: head about 2,7 times as wide as fronto-vertex at median ocellus; antenna as in fig. 41; scutellum anteriorly cellulate-reticulate, the posterior two-thirds or so tending to longitudinally lineolate-reticulate; entire fore wing with very fine discal setae, and the basal triangle with setae fewer and more sparse than in female.

MATERIAL EXAMINED. ♀-Lectotype (designated here) and 17 ♀ 4 ♂ from the type series (Risbec, 1951: 125); 1 ♂ now card-pointed has largely whitish legs and a broader fronto-vertex than the others: we are unable to determine it. All the types (except 3 ♀ 1 ♂ in PPRI) are in MHNP. The species was said to have been reared from a coccoid on *Combretum apiculatum* at Louga, Senegal (Risbec, 1951).





Figs. 43-46. *Protyndarichus orarius* spec. nov., paratypes. 43. Left antenna, outer aspect (♀T 3410-1). 44. Right antenna, inner aspect (♂T 3410-2). 45. Base of left fore wing with venation enlarged (♀T 3410-1). 46. Right mandible (♀T 3410-1).

***Protyndarichus orarius* spec. nov., figs 43-46**

Similar to *P. sparnus*, but differing in the following characters:—

**FEMALE.** Black with weak metallic lustre, especially on face and mesoscutum; scutellum black, shiny, or slightly refringent blue-green; mandible (fig. 46) with upper tooth sub-acutely rounded at apex; antenna (fig. 43) with pedicel distinctly longer than the two following segments together; funicle segments I-III small, sub-equal, sub-quadrangle, lacking rhinaria, distinctly smaller than IV which is a little longer than wide, with rhinaria; V and VI distinctly larger than IV, longer than wide, with rhinaria; thorax with scutellum having rather coarse, largely longitudinally oriented sculptural ridges, cellulate-reticulate only antero-medially; fore wing (fig. 45) with the slender setae in basal triangle more numerous; gaster and ovipositor much as in *P. sparnus*.

**MALE.** Antenna (fig. 44) with funicle segments II-VI sub-equal, distinctly shorter than I.

**MATERIAL EXAMINED.** ♀-Holotype, 21 ♀- and 9 ♂-paratypes (T 3410), SOUTH AFRICA: Stilbaai, C.P., iii.1970, H. P. Insley, ex *Idiosaissetia periugueyi* Brain on grass.

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## REFERENCES

- ANNECKE, D. P. & H. PATRICIA INSLEY. 1971. Catalogue of Ethiopian Encyrtidae and Aphelinidae (Hymenoptera: Chalcidoidea). *Entomology Mem. Dep. agric. tech. Serv. Repub. S. Afr.* **23**: 1-53.
- ASHMEAD, W. H. 1900. On the genera of the Chalcid-flies belonging to the subfamily Encyrtinae. *Proc. U.S. Natn. Mus.* **22**: 323-412.
- COMPERE, H. 1928. New coccid-inhabiting chalcidoid parasites from Africa and California. *Univ. Calif. Publ. Ent.* **4**: 209-30.
- COMPERE, H. & D. P. ANNECKE. 1961. Descriptions of parasitic Hymenoptera and comments (Hymenopt.: Aphelinidae, Encyrtidae, Eulophidae). *J. ent. Soc. sth. Afr.* **24**: 17-71.
- EADY, R. D. 1960. A new genus and two new species of Encyrtidae (Hymenoptera, Chalcidoidea) from the Banana Scab Moth, *Nacoleia octasema* (Meyr.). *Bull. ent. Res.* **50**: 667-70.
- MAYR, G. 1875. Die europäischen Encyrtiden, biologisch und systematisch bearbeitet. *Verh. zool.-bot. Ges. Wien* **25**: 675-778.
- MERCET, R. G. 1922. Chalcidoideos nuevos de Francia. *Boln. R. Soc. esp. Hist. nat.* **22**: 396-402.
- RISBEC, J. 1951. Les Chalcidoideos d'A.O.F. *Mém. Inst. fr. Afr. noire* **13**: 7-409.
- 1954. Chalcidoideos et Proctotrupides de l'Afrique tropicale française. *Bull. Inst. fr. Afr. noire* **16**: 1035-92.
- 1955. Hyménoptères parasites du Cameroun. *Bull. Inst. fr. Afr. noire* **17**: 191-266.
- 1958. Encyrtidae de Madagascar. *Bull. Acad. malgache* **35**: 17-44.
- SUBBA RAO, B. R. 1970. A redescription of *Exoristobia* Ashmead 1904 and description of two new species (Hymenoptera: Encyrtidae). *Proc. R. ent. Soc. Lond. (B)* **39**: 109-13.
- TRJAPITZIN, V. A. 1971. Review of genera of palaearctic encyrtids (Hymenoptera: Encyrtidae). [In Russian]. *Trudy vses. ént. Obshch.* **54**: 68-155.

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